



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/796,473

03/09/2004

Khuy V. Nguyen

2000.150

2279

29494

7590

09/24/2007

HAMMER & HANF, PC
3125 SPRINGBANK LANE
SUITE G
CHARLOTTE, NC 28226

EXAMINER

LAFOND, RONALD D

ART UNIT

PAPER NUMBER

1762

MAIL DATE

DELIVERY MODE

09/24/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/796,473	Applicant(s) NGUYEN ET AL.	
	Examiner Ronald D. Lafond	Art Unit 1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>06/09/2004, 06/16/2006</u> | 6) <input checked="" type="checkbox"/> Other: <u>IDS 07/17/2006</u> |

DETAILED ACTION

Claim Objections

1. Claims 2 – 4, 6, and 7 are objected to because of the following informality: Improper grammar. In each of these Claims, the word 'being' is improperly used; in each instance, changing 'being' to 'is' would correct the improper grammar. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. Claim 6 is vague and indefinite because the "coating" Markush group includes "coating," which is confusing; the Claim is further indefinite because laminating and casting are not coating methods. For examination purposes, the first instance of "coating" in the Claim will be interpreted by the Examiner to mean application method.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
6. Claims 1 – 4 and 6 – 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee, et al. (United States Patent Application Publication US 2002/0187401 A1, hereafter Lee) in view of Hamer (United States Patent 4,620,956).
7. Regarding Claim 1, Lee teaches a method of making a composite microporous membrane (see Paragraph [0003]) comprising the steps of: a) coating a nonporous precursor film with a polymer composition (see Paragraph [0026]); and b) stretching the coated nonporous precursor, the stretching further comprising a first stretching conducted at a first temperature and a first stretching ratio, and a

Art Unit: 1762

second stretching conducted at a second temperature and a second stretching ratio (see Paragraph [0112]). While Lee does not explicitly teach that the first and second stretching steps occur with first and second stretching rates, respectively, it is an inherent property of stretching steps that they occur with stretching rates; therefore, the limitations of stretching rates are inherently taught by Lee.

8. Lee does not teach the limitation wherein the first stretching rate is different than the second stretching rate. However, Hamer teaches just such a limitation, wherein a first stretching is conducted at a first temperature and a first stretching rate, followed by a second stretching conducted at a second temperature and a second stretching rate, wherein the first and second stretching rates are different (see Column 11, lines 8 – 14, and Tables I – IV in Columns 7 and 8). Furthermore, both Lee and Hamer teach methods of producing microporous films from nonporous starting materials for use in battery separators (see Paragraphs [0003] – [0011] of Lee and Column 1, lines 5 – 68, and Column 2, lines 1 – 20), that the nonporous starting material comprises polyethylene (see Paragraphs [0026] and [0030] of Lee, and Column 2, lines 34 – 37, and Column 5, lines 15 – 17 of Hamer), and that the first stretching step is a low temperature stretching step and the second stretching step is a high temperature stretching step (see Paragraphs [0044] – [0062] of Lee and Column 5, lines 15 – 48, of Hamer). Finally, Hamer teaches, in Column 11, lines 20 – 24, that “microporous ... films produced by the process of the present invention have greatly improved permeabilities with respect to microporous films produced by other processes.” Therefore, it would have been obvious to one having ordinary skill in the art at the time of the present invention to have modified the method taught by Lee by utilizing a second stretching rate different from the first stretching rate as taught by Hamer to have obtained the advantage of improving the permeability of the microporous film as taught by Hamer.

9. Regarding Claims 2 – 4 and 8 – 19, Hamer teaches the method wherein the first stretching rate of 212 %/min is greater than the second stretching rate of 22 %/min, wherein the first stretching temperature of an ambient of 23 C (see Column 7, line 28, and Column 9, lines 19 and 59) is less than the second stretching temperature of 103 C, and wherein the first stretching ratio of 40 percent is less than the second stretching ratio of 129 percent (see Column 11, lines 8 – 13).

Art Unit: 1762

10. Regarding Claim 6, Lee teaches the method wherein coating consists of liquid coating/dipping and die coating, which is generic/inclusive of co-extrusion (see Paragraphs [0036], [0040], [0048], and especially [0063]).

11. Regarding Claim 7, Lee teaches the method wherein the polymer compositions include fluoropolymers, polyamides, polyvinyl acetate, polysulfone, polysiloxane, etc. (see Paragraph [0032]). Hamer also teaches extrusion type coating methods (see Column 4, lines 10 – 37).

12. Regarding Claim 20, Lee in view of Hamer does not explicitly teach the method wherein, prior to stretching, a second nonporous precursor is applied on said coating. It is the Examiner's position that it is within the purview of one having ordinary skill in the art to apply more than one coating or precursor layer in a composite to achieve a desired thickness, permeability, or other property. It would have been obvious to one having ordinary skill in the art at the time of the present invention to have modified the method taught by Lee in view of Hamer by applying a second nonporous precursor on top of the polymer coating to provide a composite coating material of a desired thickness or permeability.

13. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Hamer, and further in view of Hasegawa, et al. (United States Patent 6,127,438, hereafter Hasegawa).

14. Regarding this Claim, Lee in view of Hamer does not teach the method further comprising the step of subsequently extracting a portion of the polymer composition from the stretched coated precursor. However, Hasegawa teaches just such a limitation, wherein a plasticizer is included in the formation of a membrane to achieve a suitable forming viscosity and influence porosity and pore size and is leached out after stretching (see Column 3, lines 16 – 28, Column 6, lines 26 – 67, and Column 7, lines 1 – 18). Furthermore, Hasegawa teaches, in Column 2, lines 54 – 67, that "the object of the present invention is to provide ... a polyethylene microporous film which is excellent in mechanical property, permeability and productivity and has both a sharp fuse effect and a high heat resistance which can assure the safety of batteries even under severe situations." Lee, moreover, teaches that the use of plasticizers in the production of such composite microporous membranes is known in the art (see Paragraph [0009] and [0010]). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the present invention to have modified the method taught by Lee in view of Hamer by using a plasticizer and

Art Unit: 1762

removing it at a step subsequent to the stretching process to produce microporous membranes with excellent mechanical properties, permeability, and productivity, and sharp fuse effect and high heat resistance to improve battery safety as taught by Hasegawa.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ronald D. Lafond whose telephone number is (571) 270-1878. The examiner can normally be reached on M - F, 9:30 AM - 6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on (571) 272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


RDL


FRED J. PARKER
PRIMARY EXAMINER